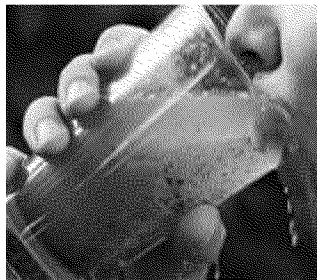


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Sent: Tue 8/18/2015 2:55:35 PM
Subject: Water Law News for August 18, 2015



Water Law News

for August 18, 2015

Bloomberg BNA Daily Environment Report™

Environmental Reviews

Fate of Shell Arctic Homeport in Seattle Begins Litigation

The fate of Royal Dutch Shell's Arctic exploration homeport in Seattle now hangs in the balance during an administrative hearing that began Aug. 13 on whether the facility can be classified as a cargo terminal as required by its municipal...

Oil & Gas

Shell Gets Permit to Drill Deeply for Oil in Chukchi Sea

Royal Dutch Shell Plc has received the modified permit it needed to drill into potential oil-bearing layers of rock beneath the Chukchi Sea now that the company has a last piece of equipment nearby for emergency use....

Pipeline Safety

Canada Study: Oil, Gas Pipelines Much Safer Than Rail

Pipelines are by far the safest method to move large amounts of oil and gas across North America, more than four times as safe as using rail cars, according to a study by a Canadian policy think tank. ...

Superfund

Water Act Lawsuit Barred as Challenge to CERCLA Cleanup

A Clean Water Act citizen suit seeking to address contaminated groundwater migrating from a Superfund site is barred as a challenge to an ongoing Superfund cleanup, a federal court in Nevada ruled (Diamond X Ranch LLC v. Atl. Richfield Co.,...

Water Pollution

Advocacy Group Sues Massachusetts Company Over Stormwater

Clean Water Action has filed a citizen lawsuit in federal court in Boston seeking to compel a Massachusetts sand and gravel company to halt the allegedly illegal discharge of polluted stormwater into nearby wetlands and waterways (Clean Water...

Water Pollution

EPA Inspector General Investigating Animas River Spill

The Office of the Inspector General for the Environmental Protection Agency said it will investigate the cause and EPA's response to the release of 3 million gallons of mining waste and sediment into the Animas River in southwest Colorado....

Water Pollution

Lawsuit Seeks Curb on N.Y. Power Plant's Water Intake

Environmental group Soundkeeper Inc. has sued the New York Department of Environmental Conservation and National Grid Generation LLC to compel action on a permit renewal application that would limit the utility's cooling water intake...

Water Pollution

Pennsylvania Utility Agrees to Control Sewer Overflows

A Pennsylvania water treatment plant has agreed to a plan to control combined sewer overflows into the Delaware River and its tributaries, the Justice Department and the Environmental Protection Agency announced Aug. 17 (United States v....

Water Pollution

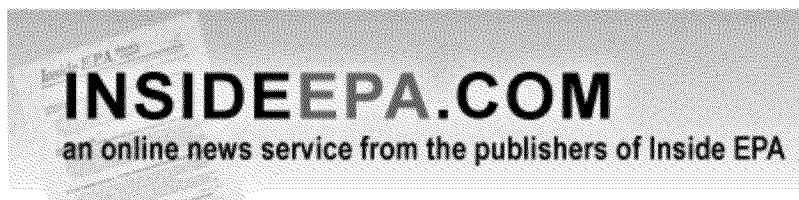
Small Mining Companies Sue EPA, Corps Over Water Rule

A Washington-based mining and exploration association became the latest group to sue the Environmental Protection Agency and the U.S. Army Corps of Engineers over the final clean water rule that takes effect Aug. 28 (Am. Exploration &...

Water Resources

Alberta Limits Oil-Sands Water Use

Alberta's energy regulator restricted applications by oil and natural gas operators to withdraw water from the Athabasca River amid dry conditions in the province....



Inside EPA's **Risk Policy Report**, 08/18/2015

<http://insideepa.com/newsletters/risk-policy-report>

Latest News

Utilities Claim EPA Lacks Authority For Ash Rule's Groundwater Mandates

Power companies are urging a federal appeals court to scale back or eliminate groundwater protection provisions in EPA's first-time Resource Conservation & Recovery Act (RCRA) coal ash disposal rule, arguing the agency lacks authority for those requirements and for mandates on closed "legacy" ash sites and other facilities.

Environmentalists Ramp Up Push For EPA To Tighten Pending Utility ELG

Environmentalists are using meetings with top EPA and White House officials to ramp up their push for EPA to use one of the two strictest options it proposed for its looming final power plant effluent limitation guideline (ELG) to curb wastewater discharges from the sector, and to include various other measures to tighten the regulation.

News Briefs

EPA IG Researching Colorado Mine Wastewater Spill

EPA's Inspector General (IG) is starting preliminary research into the cause of, and the agency's response to, the recent Gold King Mine wastewater spill in Colorado during an EPA cleanup operation that released 3 million gallons of water containing heavy metals, saying the study responds to a congressional request.

Greenwire

WILDLIFE REFUGES:

Unused oil and gas gear threatens habitat, drinking water

Corbin Hiar, E&E reporter

Published: Monday, August 17, 2015



Fish and Wildlife Service official Felipe Prieto checks the protective berm and bird netting around St. Charles #1, an abandoned well that has been leaking dozens of barrels of toxic brine for nearly two years. Photo by Corbin Hiar.

ARANSAS NATIONAL WILDLIFE REFUGE, Texas -- A well that blew out in 1940 has been intermittently leaking oily salt water here ever since.

The most recent attempt to cap it in 2007 failed six years later, refuge officials said.

The 9,000-foot deep well began bubbling up again, imperiling the winter habitat of the endangered whooping crane as well as drinking water for millions of Texans. A visit to the refuge near Corpus Christi in late May found it leaking gas, oil and about 60 barrels of brine a day.

While the situation in Aransas is extreme, government reports and interviews with employees and veterans of the National Wildlife Refuge System show that hundreds of similarly inactive wells remain a major challenge for the Fish and Wildlife Service.

The agency lacks the legal power or funding to do much about improperly sealed or abandoned wells that are putting refuges and nearby communities at risk.

"It's a big problem," said Darrin Unruh, who for 15 years struggled to protect natural resources in eastern Oklahoma's Deep Fork National Wildlife Refuge, which is pockmarked by oil and gas infrastructure.

"We just haven't been able to do anything," Unruh said in May while standing beside a 12-foot pumpjack engulfed in foliage. "We can't find the producers, and we don't have the money."

The problems with abandoned infrastructure at Aransas and Deep Fork are mirrored at dozens of units in the refuge system, a recent study by a pair of Fish and Wildlife researchers found.

More than a fifth of all wells on refuges -- 1,141 -- are either plugged and abandoned or in an "unknown" state of operation, according to the [study](#), published April 27 in *PLOS ONE*, a peer-reviewed scientific journal.

But the study couldn't provide more detailed information in part because Fish and Wildlife's oil and gas oversight has long been woefully understaffed.

The Government Accountability Office determined in 2007 that at least 45 positions were needed to properly monitor refuge production. But eight years later, Fish and Wildlife has only had enough money to hire 14 employees who are primarily responsible for such oversight, according to an FWS spokeswoman.

Problems also arose in part because Fish and Wildlife rules for private oil and gas production, which are currently being revisited by the agency, offer little guidance and no enforcement tools for refuge managers struggling to mitigate the threat posed by abandoned infrastructure.

The one paragraph that governs private oil and gas production on refuges vaguely states that "structures and equipment must be removed from the area when the need for them has ended. Upon the cessation of operations the area shall be restored as nearly as possible to its condition prior to the commencement of operations."

Although those lines are open to interpretation, experts believe they call for agency officials to get the unused pumpjacks, flowlines, tank batteries and other oil and gas equipment off refuges when they are no longer in use. But how managers are to accomplish that is left unclear, Fish and Wildlife officials said.

Other challenges include questions about liability if or when leaks occur, the extent and location of abandoned infrastructure, and how to prevent water contamination and other problems while working under strict budget constraints.

Problems with removal

GAO declared in 1989 that oil and gas production was "incompatible" with the system's mission. But it still occurs on refuges because drilling pre-dated the protection of some sites. In other cases, Fish and Wildlife only had enough money to buy the surface rights to an area that it planned to use as a refuge.

The 9,700-acre Deep Fork refuge contains 173 oil and gas wells. That's the fourth most of any of the 563 refuges in the national system, according to the *PLOS ONE* study.



Former Deep Fork refuge manager Darrin Unruh inspects an abandoned pumpjack on a well pad that has been largely reclaimed by the forest. Photo by Corbin Hiar.

Unruh, who managed Deep Fork until moving to another refuge in the Sooner State in June, asked for help in removing some of the abandoned wells from FWS official Mary Maddux. A soft-spoken native of Wyoming who left the Bureau of Land Management's oil and gas permitting division in 2010 to join FWS, Maddux is in charge of minimizing the impacts of oil and gas activities in its Southwest Region.

But their efforts were largely unsuccessful, he said.

Although the wells at Deep Fork are generally around 1,000 feet deep and therefore less expensive to seal than those at Aransas or many other refuges, it still costs up to \$10,000 each to plug them, according to Unruh. That's big money for a refuge with an annual budget of about \$1 million.

The pair even asked the Oklahoma Corporation Commission (OCC), the state oil and gas regulator, "if it would be OK to unhook the wells, get a scrap iron dealer in here to remove this stuff, and OCC told us, 'You better not do that, because once you unhook the wells, if you damage the well in any way, you then own it,'" he said, referring to any accidents that could result from removing the solid steel pumpjacks.

Scrapping out long-idled equipment could also complicate Fish and Wildlife's attempts to recover well-capping costs from absentee producers, according to Unruh.

"If we ever do find the owner, he is going to be able to say 'Well, you took my equipment; I could have sold my equipment and used the funds to help plug the wells,'" he said.

Matt Skinner, a spokesman for the OCC, confirmed that state regulators typically recommend against removing abandoned oil and gas infrastructure.

"We warn landowners that, if you touch that well, that liability is yours," Skinner said in a phone interview earlier this month. "That's not a commission decision. That's state law."

It's better to leave the plugging up to the OCC, Skinner suggested.

The commission is in charge of preventing "environmental pollution down-hole," he said. "We're the ones who are protecting the groundwater."

After a well is capped, the Oklahoma Energy Resources Board will then generally take responsibility for removing any abandoned oil and gas infrastructure or surface pollution. For example, the industry-funded state agency took out oil-soaked gravel and planted native grasses on a well pad along the Deep Fork River a couple of years ago.

Yet in late May, a well shaft on that revegetated pad near the refuge's headquarters was still protruding from the mud. Shimmering wisps of methane -- a planet-warming gas 25 times more potent than carbon dioxide -- drifted out of the rusted 4-inch metal tube.

Skinner argued that such a situation was unusual.

"The common practice is for us to plug the well first, but if a well is not an emergency or [an] urgent need to plug, it can take some time -- as our funding is limited and we have to make sure we have enough money on hand for emergency plugs," he wrote in a follow-up email last week.

The reason that well, which has been on the OCC's list of abandoned wells since 1999, hasn't been plugged yet is partially because the state agency believes it could still produce additional gas or oil for a new company, Skinner explained. The hydrocarbon fumes that continue to emanate from the well shaft suggest that the OCC might be right.

Hidden dangers

FWS has also not yet followed a 2003 GAO [report](#) recommendation that the agency create a system for collecting and managing data on the oil and gas infrastructure they have and where it is located. Although setting up such a database would be costly at first, it could also make refuge managers aware of partially remediated sites that blend in with the natural environment.

Sister agencies' handling of orphan wells varies widely

Although the Fish and Wildlife Service and Bureau of Land Management both lie within the Interior Department, the agencies have dramatically different records when it comes to dealing with unsealed oil and gas wells left on their lands.

Interior's Office of Inspector General found in a March [report](#) that 60 percent of the approximately 5,000 wells on Fish and Wildlife lands were either inactive, plugged and abandoned, or in an "unknown" state of operation.

The type of unknown wells of particular concern for the OIG are "orphaned" ones that are unplugged with

no records to show which companies are responsible for sealing them. Identifying and monitoring those potentially dangerous wells is "essential to effectively manage their impact on refuges," the report says.

A subsequent peer-reviewed study by a pair of Fish and Wildlife researchers separated inactive wells from the more worrisome abandoned or unknown wells and found that together they account for nearly 23 percent of wells on refuge system lands.

On the other hand, BLM is doing such a good job of keeping track of its inactive and abandoned wells and sealing previously orphaned ones that the OIG last month called off an evaluation of the agency's orphaned well oversight.

"These wells likely constitute less than 0.1 percent of the nearly 95,000 wells managed by BLM," the Interior watchdog said in a memo. "We feel that the small number of orphaned wells BLM identified does not justify continued work in this area at this time."

The inspector general outlined a few "promising practices" that it determined had helped BLM to keep its rate of orphaned wells so low: encouraging existing leaseholders to plug orphaned wells by offering to not increase their bonding requirements or requiring such wells to be capped as a condition of new leases; requiring operators to inform BLM if they sell or trade their operating rights; and requiring higher bonds for new operators, since they don't have established track records.

Experts on public lands energy development also chalked up BLM's comparative success to the greater familiarity that the agency has with oil and gas production. FWS lands have nearly 95 percent fewer wells than the property managed by its sister agency.

They also noted that BLM has a higher share of land where it owns the mineral rights.

Asked to comment on Fish and Wildlife's comparatively worse performance, agency spokeswoman Vanessa Kauffman said that its forthcoming oil and gas proposal would provide "guidance on how to manage abandoned wells in the Service's national wildlife refuges."

-- Corbin Hiar

For instance, Fish and Wildlife officials at North Texas' 12,000-acre Hagerman National Wildlife Refuge had to fight an oil spill in December 2011 at an abandoned and overgrown production site that they had never noticed before.

"That was a well we didn't know existed until it started bubbling up," Refuge Manager Kathy Whaley said in an interview at the refuge's offices earlier this year. Standing over a table-sized map of Hagerman, the 25-year Fish and Wildlife veteran pointed to a spot along the shoreline of Lake Texoma, a massive reservoir straddling the border of Texas and Oklahoma.

"We put a net over it to keep birds out of it. But it literally sat there and bubbled and oozed for six weeks," she said, shaking her head at the memory.

Maddux, the oil and gas specialist, added, "If we hadn't taken it upon ourselves to have a pit dug, the oil would have eventually made it to the lake."

While the well was leaking, the refuge officials were fighting with the Texas Railroad Commission (TRC), which regulates oil and gas in the state, over who was responsible for the spill. Should a company, the state or the federal government pay to replug the well and clean up the damage?

The TRC initially offered to cap the well, since its last owner was unknown, Maddux said. But "to clean up

the oil that had already been spilled on the ground, that was up to us," she added. "As the Fish and Wildlife Service, we do not have other budgets or other funding sources to do that."

Ultimately, the commission determined that the leak was due to the activities of a nearby producer. It required that company to plug the well, and the operator voluntarily revegetated the damaged landscape.

Earlier this year, flood-ravaged Hagerman suffered another oil and gas leak. This time it was from an active operation, which officials say can pose similar if not greater risks to refuges (*Greenwire*, June 12).

'What's happening underneath?'

Similar questions about responsibility have flared at Deep Fork.

A March report from the Interior Department's Office of Inspector General estimated that 84 of Deep Fork's wells were "orphaned," meaning they were abandoned without being plugged and no operator can be found to pay for the costs of remediating the production sites.

"Orphaned wells can pose environmental hazards because hydrocarbons, salts and groundwater mingle," the OIG said. The report explained that unplugged or poorly sealed wells allow "these materials to mingle, thereby possibly contaminating underground aquifers and water wells, or seeping to the surface to contaminate fields, water ways or ponds."

Surface seepage is a particular problem because it can harm humans and wildlife as well as "increase the risk and ferocity of wildfires by providing hydrocarbons as additional fuel," the OIG added.

The agency estimated in a May fact sheet that there are 450 unplugged oil and gas wells throughout the system that no longer have a known or solvent operator. Completely cleaning up those orphaned sites could cost taxpayers in excess of \$20 million.

The abandoned wells haven't caused any obvious problems yet at Deep Fork. But Unruh thinks it's only a matter of time until something bad happens to the old well casings that are keeping remnant hydrocarbons from mixing with the surrounding soil and water.

"My biggest concern is what I don't know: What's happening underneath," he said.

But by the time oil seeps into groundwater relied upon by more than 12,300 residents of nearby Okmulgee, Okla., "it's too late," he added. "Maybe we haven't reached that corrosion point -- maybe that's in five years or 10 years."

Skinner, the spokesman for the state oil and gas regulator, argued that the reason the state hasn't moved to seal many of the reserve's abandoned wells is because they don't pose any immediate threats.

"We have limited funds," he said. "So we have to do heavy-duty triage. We have to do prioritization."

Skinner also noted that, if the OCC discovers a change in the condition of one, then "we have to take action on the well sooner rather than later."

'Slight contamination'

In Aransas, where the well known as St. Charles #1 has been spewing oil, gas and brine for nearly two years, the threat of drinking water contamination is a more pressing concern. Hilcorp Energy Co., which owns a lease covering most of the 115,900-acre refuge, only agreed to install groundwater monitoring

equipment and truck away the oil-laced brine produced by the 76-year-old well in 2014 after a draft report from Interior's OIG highlighted the troubling situation.



Natural gas bubbles to the surface of the oily brine that continues to leak from the 76-year-old oil well. Photo by Corbin Hiar.

"Thus far, the soil tests and the groundwater show minimal -- below what are considered threshold -- levels of contamination," Felipe Prieto, an FWS official who has also worked at the TRC and Texas Parks and Wildlife Department, said in May. "But there is a slight contamination."

Asked about the worst-case scenario for the leak, Prieto said it could poison the Gulf Coast aquifer, a belt of groundwater that stretches from Mexico around to the western edge of Florida. In Texas alone, the aquifer provides drinking water for more than 8 million people.

The costs of monitoring the aquifer and trucking oily brine out of the refuge are adding up for Hilcorp. Yet they still appear to be cheaper than capping St. Charles #1.

"It will take a half-million to plug this one up," predicted refuge official Greg Birkenfeld, who spent a decade capping oil wells before joining FWS in the late '90s. "It'll be expensive."

That would make the well even more costly to clean up than the \$400,000 per well that the Texas Railroad Commission paid in June 2011 to cap and remediate three orphaned sites in the 90,788-acre Lower Rio Grande Valley National Wildlife Refuge. Those wells had been abandoned in the 1990s and were leaking oil into East Lake, according to a Fish and Wildlife [case study](#). That salt lake, located in a biologically diverse area along the Gulf Coast just north of the Mexican border, provides winter habitat to threatened western snowy and piping plovers along with thousands of migrating geese and ducks.

Fish and Wildlife spokeswoman Vanessa Kauffman confirmed in July that the St. Charles #1 well was still leaking.

"We continue to work with and urge Hilcorp to come up with a solution," Kauffman said in a carefully worded statement. She later noted that the company "voluntarily took responsibility for the well, but in most cases when operators buy [an oil and gas] field they generally don't buy the plugged wells and are not responsible for them."

Hilcorp, which is one of the [largest](#) privately held oil and gas producers in the United States, did not respond to repeated requests for comment.

Later this year, the agency is planning to propose regulations that seek to clarify and expand its existing regulations for oil and gas development. The move has already drawn opposition from congressional Republicans, who worry that the effort will impose unnecessary red tape on energy producers (*E&E Daily*, May 21, 2014).

But Kauffman said those rules "would provide a predictable and consistent approach to oil and gas development on refuge system lands." If the regulations are released at the end of the month, as currently planned, the soonest they could go into effect would be September 2016.

Until then, the extent to which Fish and Wildlife officials' can address the abandoned oil and gas infrastructure that is endangering federal land, water and wildlife will continue to be largely up to the discretion of industry and state regulators.

DRINKING WATER:

Calif. imagines smaller, smarter approach to future droughts

Published: Monday, August 17, 2015

California officials envision desalination plants, yards without lawns and smarter irrigation technology as key tools to help the state weather future droughts.

No longer relying on the large water projects that were meant to buoy the state's fortunes, instead, water managers imagine a host of incremental measures to do more with what nature provides.

Peter Brostrom, a state Department of Water Resources official responsible for finding water efficiencies, calls this "a variety of small steps across the board."

Those steps include thinning overgrown forests, fixing leaky water delivery systems and ensuring consistent water usage data.

Some of those reforms may see their beginnings during the current drought, even if their full benefit will not be seen until some time later, officials say.

"A drought pushes us and shows where we are not prepared," said Martha Davis, a Mono Lake advocate who now works at the Inland Empire Utilities Agency in Chino, Calif., "and also shows us what is working in one place, and what may work in other places" (Peter King, *Los Angeles Times*, Aug. 15). -- **SP**

AGRICULTURE:

Drought brings early, brief Calif. wine harvest

Published: Monday, August 17, 2015

Winemakers are seeing the earliest growing season in years amid continued drought conditions that have growers scrambling to keep pace and concerned about financial losses.

"I've been making wine for 38 years, and this is the second-earliest harvest I've ever seen," said Eileen Crane, the chief executive and winemaker of Domaine Carneros, which started picking grapes July 31.

Some growers of pinot noir in Sonoma and Mendocino counties are already in full harvesting mode, while it remains to be seen how later-ripening wine varieties will fare this year.

The harvest is not only coming earlier but is over faster, growers say, with some harvests that used to last a month now being packed into as little as one week.

The cause, growers believe, is an early 2014 harvest that pushed up the growing season. Then, drought conditions, like a warm, dry winter, pushed up the beginning of a vine's life cycle. And cool weather in spring caused many vines to ripen unevenly.

"You make the best with what you have," said Rajat Parr, of Sandhi and Domaine de la Côte in Santa Barbara County, "but it's kind of depressing" (Esther Mobley, [San Francisco Chronicle](#), Aug. 15). -- SP

FORESTS:

'Living laboratory' to test drought, fire prevention

Published: Monday, August 17, 2015

A 10,115-acre forest parcel in the Sierra Nevada will serve as a landscape to test methods to reduce the risk of mega-fires and minimize the effects of drought on California's snowpack.

Scientists from the Nature Conservancy and the University of California, Merced, will lead a five-year collaborative research and restoration project in a living laboratory at the headwaters of the American River. The \$10 million parcel was purchased by the Nature Conservancy, the American River Conservancy and the Northern Sierra Partnership.

"We are facing another record-breaking year of drought and wildfires in California," said Edward Smith, a forest ecologist at the Nature Conservancy, "and the only way to reduce the impacts of this trend is to increase the pace and scale of forest restoration."

Strategies to be tested include thinning trees, as well as leaving enough room for more snowfall to accumulate and then melt and fill rivers, rather than evaporate off the tops of the dense forests.

"Over the next two years, we plan to thin about 25 percent of the forested lands," Smith said. "After that, we'll start bringing in fire crews to conduct controlled burns" (Louis Sahagun, [Los Angeles Times](#), Aug. 14). -- BTP

NATIONAL PARKS:

Study probes effect of drought on Sequoia's famed trees

Published: Monday, August 17, 2015

The famous giant sequoias in California's Sequoia National Park could be succumbing to the state's ongoing drought, and researchers are scaling them to find out.

"We're just trying to get a better understanding of how giant sequoia trees respond to severe drought. We have very little understanding of ... how severe of a drought it takes to kill a giant sequoia tree," says Anthony Ambrose, a tree biologist at University of California, Berkeley.

The National Park Service, Stanford University, the Forest Service, the U.S. Geological Survey and the Carnegie Airborne Observatory have all come together for the first health-related study of the giant sequoia. Ambrose and other scientists are climbing the massive trees to assess their health. They will set up rainfall sensors in the branches themselves, and at the end of August, they'll return and take clippings from different heights for testing in a pressurized chamber to measure water content in the leaves.

Some of Sequoia's trees are over 3,000 years old, and they have certainly faced droughts before, but scientists worry that this drought may be too much for them.

"The good news is that there were lots of trees that still seem healthy, but there was this smaller amount that seemed to be stressed -- and stressed in ways that we haven't seen documented before in the parks," said the study's lead scientist, Koren Nydick, with Sequoia National Park.

More than 40 trees are in the process of being analyzed for stress from four years of drought and warming temperatures. "That's the kind of stress that eventually could kill a tree," Nydick said (Ezra David Romero, [NPR](#), Aug. 17). -- **BTP**

CALIFORNIA:

Residents spar over new water park

Published: Monday, August 17, 2015

A nearly \$44 million municipal water park in Dublin, Calif., is under fire from some residents who contend it sends the wrong message during the state's crippling drought.

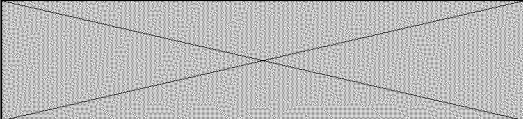
The concern over water resources has city officials taking an unusual tact for selling a public project -- boasting of how small the park is and how few residents are likely to use it.

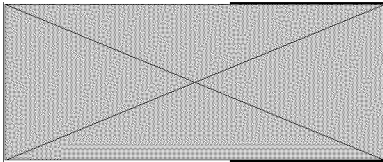
The project was greenlighted more than a decade ago, when few could have predicted the serious water shortage the state would find itself in this year. The city said the project was needed because Dublin has only one public pool.

Complaints started increasing to city officials in tandem with the state's growing warnings on water levels.

"It was just very unfortunate timing," said Paul McCreary, the city's parks and community services director.

Dublin resident Andrew ShamRao has started an online petition to reduce the size and scope of the project, but the city says it has no plans to modify the center, which is expected to open in 2017 (Sarah Maslin Nir, [New York Times](#), Aug. 15). -- **SP**

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1.EMISSIONS:

Calif. program subsidized more efficient energy use for both rich and poor. Guess whose habits didn't change?

A 2005 subsidy to encourage more efficient energy use in sunny California worked remarkably well to reduce energy usage in lower-income communities, a new study determined. But the program had little effect on people's behavior in cooler and wealthier coastal residences, so the study raises questions about the program's overall cost-effectiveness.

2.OCEANS:

Scientists warn that 2 C target is not enough to protect corals, marine life

When Peter Sale, a marine ecologist from the University of Windsor in Canada, addressed a gathering of scientists, graduate students and other delegates at the Goldschmidt Conference in Prague yesterday, he had a simple message: 2 degrees Celsius is too little, too late.

TODAY'S STORIES

3.RESEARCH:

New calculations of rising temperatures paint a dismal picture for economies of poorer nations

4.SCIENCE:

The quirky, complex business of calculating sea-level rise

5.RENEWABLE ENERGY:

Google launches 'Project Sunroof' to scan rooftops for solar potential

6.TECHNOLOGY:

Researchers develop a protective glass paint that could cut air conditioner use

7.TRANSPORTATION:

China's 2nd-largest automaker inks EV deal with Saab buyer

8.CANADA:

Alberta announces panel members to review climate policy

9.FOOD SECURITY:

Oyster farmers join with scientists to fight ocean acidification

10.EXTREME WEATHER:

Myanmar farmers scramble to avoid food shortages after devastating floods

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1.ARTIC:

After Shell decision, activists attack Obama's 'hypocritical' climate commitments

In an announcement widely anticipated by supporters and opponents of Arctic oil development, the Obama administration yesterday gave Royal Dutch Shell PLC the green light to drill into the hydrocarbon zone at its Chukchi Sea leases.

2.REGULATION:

The fracking 'loophole' that just keeps growing

Like a fish story, the "Halliburton loophole" grows a little with every telling. It has grown to be an all-purpose bogeyman for environmentalists raging against hydraulic fracturing. And in a new twist, even fracking boosters have now cast it as a bulwark against federal regulation of oil and gas drilling.

ELECTRICITY

3.GRID:

Researchers seek to isolate threats with 'big data' analysis

4.UTILITIES:

McCain, Ariz. power producer tussle over coal-burning power plant

OIL AND GAS

5.LAW:

Fracking gets go-ahead during Chaco litigation

6.GAS EXPORTS:

Lake Charles FERC review cues tough market decision

7.TRANSPORT:

Pa. recommends tougher rail inspections on crude-carrying lines

8.TEXAS:

Prolific oil-producing county 'waiting for doomsday'

9.OIL:

Pinched by prices, Canada looks wistfully at Norway savings model

10.PIPELINES:

Company with Fla. plans has checkered history with federal safety rules

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